REMARKS

Entry of the foregoing amendments and favorable consideration of the subject application in the light thereof, and in the light of the following remarks, are respectfully requested.

By the present amendment, claims 1, 15, 30 and 77 have been amended, and claims 7, 21, 36, 51, 62, 73 and 78 have been cancelled. Accordingly, claims 1-3, 8-17, 22-29, 30-32, 37-42, 44-48, 52-59, 63-70, 74-77 and 79-80 are presently pending in the subject application.

In the Official Action, the Examiner rejects all of the pending claims of record under 35 U.S.C. §103 as being unpatentable over Jessup et al (U.S. Patent No. 5,288,393) and Kaneko et al (U.S. Patent No. 5,401,280) or Fletcher et al (U.S. Patent No. 5,346,609). For the following reasons, however, the Examiner's rejection is most respectfully traversed by applicants.

The presently claimed invention provides one with an unleaded gasoline fuel which is not in compliance with the California Predictive Model for reformulated gasoline, yet still offers good (low) emissions -- which result is not predicted by the California Predictive Model. The gasoline is also substantially free of oxygenates as recited in claim 1. For it has been surprisingly found that surprisingly low emissions, particularly NO_x, can be observed for the gasoline fuels of the present invention, with the NO_x emissions being substantially lower than that predicted by the California Predictive Model established by the California Air Resources Board (CARB). Good performance with surprisingly low

NO_x emissions can be obtained despite the fact that the gasoline fuel of the present invention does not meet the specifications of the CARB reformulated gasoline fuel and hence fails the California Predictive Model. This is achieved particularly due to the control of sulfur to extremely low levels, a concept foreign to the prior art, as discussed on pages 13 and 15 of the present application. The gasoline composition of claim 1 is substantially free of oxygenates, does not meet the flat limits for at least one, if not more, of the aromatic, T90 and/or T50 requirements set for the Phase 2 reformulated gasoline, and fails the California Predictive Model for emissions. Nevertheless, the gasoline fuel of the present invention allows one to enjoy good emissions, and particularly surprisingly low NO_x emissions, while also avoiding the potential problems of oxygenates. A big reason for this is that the gasoline also contains less than 10 ppmw sulfur.

The Jessup et al reference cited by the Examiner in no manner discloses or suggests the ability of a substantially oxygenate free gasoline to exhibit low emission and still offer flexibility while not meeting the requirements of the California Predictive Model. In essence, the control of sulfur in the gasolines of the present invention to amounts less than 10 ppmw allow one to not meet the requirements of the California Predictive Model, yet still offer low emissions, particularly with regard to NO_x, in a substantially oxygen free gasoline. The Jessup et al reference in no manner discloses or suggests the control of sulfur in order to obtain such a gasoline.

The Examiner cites Kaneko et al and Fletcher et al as references suggesting the importance of controlling sulfur. It is submitted by applicants, however, that the addition

of these references in no manner cure the deficiencies of Jessup et al, or in their own right suggest the claimed invention.

The Kaneko et al reference relates to a lead free, high octane gasoline made up of a selective class of C_5 and C_6 hydrocarbons and an oxygenate, specifically methyl-T-butyl ether (MTBE). The presence of the oxygenate MTBE is required in an amount of at least three volume percent, and up to 15 volume percent, and more preferably at least four volume percent. The presence of the oxygenate is an important characteristic of the Kaneko disclosure. The presence of the oxygenate in the Kaneko et al formulation is important to achieve its cold startability and reduction in emissions of NO_x. The present invention is substantially oxygenate free, and therefore clearly distinguishes Kaneko et al.

Indeed, Kaneko et al supports the patentability of the subject claimed invention. In particular, it suggests that the presence of an oxygenate is an important consideration for reduction of emissions of NO_x. Nevertheless, the presently claimed invention permits one to achieve reductions in NO_x while being substantially oxygenate free, and not even meeting the requirements of the California Predictive Model. Accordingly, Kaneko et al would teach away from the present invention, and underscore the non-obviousness of the claimed invention. Its consideration alone or in combination with Jessup et al, therefore, can in no manner suggest applicants' claimed invention.

The second reference noted by the Examiner, i.e., Fletcher et al, also does not suggest and cannot be combined with Jessup et al to suggest applicants' claimed invention. The patent in no manner is directed to an oxygenate free gasoline which does not meet the California Predictive Model. While the patent does describe a process for reducing the

amount of sulfur in a hydrocarbon stream, the process is not directed to controlling the sulfur so that the amounts are within the recited ranges of the claimed invention and the gasolines are mixed so as to not meet the California Predictive Model. Indeed, the lack of control in Fletcher et al is demonstrated in Table 4, wherein the amount of sulfur is at least 30 ppmw and higher.

Accordingly, it is respectfully submitted that the combination of Fletcher et al with Jessup as well can in no manner suggest applicants' claimed invention.

Favorable reconsideration and withdrawal of the Examiner's rejection of the claims of record over Jessup et al, Kaneko et al and Fletcher et al, either taken alone or in combination, are therefore respectfully requested.

The Examiner also refers to Townsend et al (H1305) in the Office Action. For the following reasons, however, it is submitted that reliance on Townsend et al also does not suggest the claimed invention.

The Townsend et al reference relates to reformulated gasolines, but the gasolines must include an oxygenate. Thus, if one were to consider Townsend et al alone or combine Townsend et al with Jessup et al, one would simply produce an oxygenated gasoline. This is totally contrary to the presently claimed invention.

Townsend et al does suggest that the concentration of sulfur be reduced in reformulated gasolines. The reduction, however, is such as to not exceed 100 ppmw. The preferred range is from 30 to about 50 ppmw. See, column 3, lines 50-54 of Townsend et al. Thus, the amount of sulfur suggested (and preferred) by the prior art still far exceeds that of the presently claimed invention. A recognition of using amounts less than 10 ppmw

is simply nowhere suggested in the prior art. The importance of controlling sulfur to such low amounts to provide an oxygenate-free gasoline, which exhibits good emissions yet still fails the California Predictive Model requirements, is nowhere disclosed in Townsend et al.

The Examiner, however, focuses on the words "less than about 30" and thereby concludes that Townsend et al suggests the advantages of going to less than 10 ppmw sulfur. Applicants respectfully disagree with the Examiner's conclusion.

There is absolutely no motivation whatsoever in Townsend et al., other than impermissible hindsight reconstruction, for the skilled artisan to lower the amount of sulfur to the levels of the presently claimed invention. Why would one of ordinary skill in the art reading Townsend et al. incur the expense of removing sulfur or choosing only low sulfur streams to make a gasoline such that the amount is less than 10 ppmw? There is simply no recognition in Townsend et al. as to any difference between the 30 to 50 preferred range, and anything less than 30. There is no recognition of the benefits of the claimed invention of being able to efficiently and effectively blend a non-oxygenate containing gasoline from refinery streams through the control of sulfur, with the control being such as to ensure that very low amounts of sulfur are in the refinery streams being used. Indeed, if one follows the actual teachings of Townsend et al., and one reviews the specific examples used to illustrate the embodiments of Townsend et al., one would use refinery streams to formulate a gasoline having greater than 30 ppmw sulfur. See, Table 1 in column 9 of Townsend et al. Therein, all of the gasolines formulated have greater than 30 ppm sulfur.

Therefore, it is respectfully submitted by Applicants that the skilled artisan reading Townsend et al. would be directed to the use of refinery streams to blend a gasoline having

greater than 30 ppm sulfur, which is in the preferred range of about 30 to 50 ppm of Townsend et al. The presently claimed method, and hence the presently claimed compositions, are nowhere disclosed or suggested in Townsend et al.

For the reasons discussed above, neither does Jessup et al disclose such a gasoline. Accordingly, it is submitted that a consideration of Townsend et al alone, or a combination of Townsend et al with Jessup et al, can in no manner discloses applicants' claimed invention.

Favorable reconsideration and withdrawal of the Examiner's rejection of the claims of record over Townsend et al taken alone or in view of Jessup et al are therefore respectfully requested.

From the foregoing, it is believed by applicants that further and favorable consideration of the subject application is next in order, and is earnestly solicited.

Respectfully submitted,

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Attachment to Reply and Amendment dated January 18, 2002
Marked-up claims 1, 15, 30 and 77

1. An unleaded gasoline fuel, which is substantially free of oxygenates and has a Reid vapor pressure less than 7.5 psi;

a sulfur content less than [15 ppmw] 10 ppmw;

an aromatics content of greater 25 volume percent but no greater than 30 volume percent; and

the fuel composition fails the California Predictive Model requirements for emissions.

15. An unleaded gasoline fuel, which is substantially free of oxygenates and has a Reid vapor pressure less than 7.5 psi;

a sulfur content less than [15 ppmw] 10 ppmw; and

a 50% D-86 Distillation Temperature greater than 210 but no greater than 220°F,

and the fuel composition fails the California Predictive Model requirements for emissions.

30. An unleaded gasoline fuel, which is substantially free of oxygenates and has a Reid vapor pressure less than 7.5 psi;

a sulfur content less than [15 ppmw] 10 ppmw; and

a 90% D-86 Distillation Temperature between 300 and 330°F,

and the fuel composition fails the California Predictive Model requirements for emissions.

Attachment to Reply and Amendment dated January 18, 2002
Marked-up claims 1, 15, 30 and 77

77. An unleaded gasoline fuel comprising a controlled sulfur content of no greater than [15 ppmw] 10 ppmw, thereby allowing greater flexibility in blending with respect to the amounts of oxygen, aromatic hydrocarbons, benzene and olefins and the T50 and T90 characteristics, without regard to the California Predictive Model for the Phase 2 California Reformulated Gasoline, while providing a gasoline fuel which exhibits low emissions.